Remarks

Claims 1-19 and 21-41 are pending and at issue. Claims 1, 11, 21, and 32 are independent. Claim 42 has been added. The applicants have carefully considered the Office action mailed February 8, 2007. In the Office action, all of the pending claims were rejected as anticipated by Hollingsworth (*An Online Computation of Critical Path Profiling*) or unpatentable over Hollingsworth in view of Sarma (US 6,988,264). In view of the following remarks, reconsideration of the application (including new claim 42) is respectfully requested.

Claim 1 recites a method comprising, *inter alia*, monitoring information exchanged between a processing unit and first and second threads executed by the processing unit and determining, based on the information exchanged between the processing unit and the first and second threads, a critical path of thread execution and maintaining the critical path of thread execution in a critical path tree.

Hollingsworth is directed to an online computation of a critical path profile. The applicants respectfully submit that the cited portions of Hollingsworth do not describe or suggest monitoring information exchanged between a processing unit and first and second threads executed by the processing unit and determining, based on the information exchanged between the processing unit and the first and second threads, a critical path of thread execution and maintaining the critical path of thread execution in a critical path tree. Rather, the only monitoring described by the portions of Hollingsworth cited in the Office action for the aforementioned recitations of claim 1 involves monitoring the length of the critical path and the share of the critical path due to the selected procedure. (Page 15, § 2.3, ¶ 4). There is no indication in the cited portion of Hollingsworth that this information (the length of critical path or share of the critical path due to the selected procedure) is exchanged between a

processing unit and first and second threads executed by the processing unit. Nor is there any indication in Hollingsworth that information exchanged between the processing unit and first and second threads is used to build a critical path tree for the threads. Rather, as shown in the pseudo code of Figure 3, Figure 4, and Figure 5 of Hollingsworth, Hollingsworth describes using a critical path monitoring application to track the CPU time and the length of a process. Again, there is no suggestion that the CPU time or the length of the process is exchanged between the processing unit and the first and second threads.

The applicants also note that, while claim 1 recites, *inter alia*, maintaining the critical path of thread execution in a critical path tree, Hollingsworth specifically teaches away from such a method. In particular, Hollingsworth states "explicitly building the graph is not practical for long running programs. One way to overcome this limitation is to develop an algorithm that does not require storing events logs or building the graph." (Page 13, first full paragraph). In addition, see Hollingsworth, page 11, § 1, ¶ 2.

It is well settled that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051 (Fed. Cir. 1987). Thus, for at least the forgoing reasons, claim 1 and all claims depending therefrom are in condition for allowance. As described above, Hollingsworth does not describe or suggest monitoring information exchanged between a processing unit and first and second threads executed by the processing unit and determining, based on the information exchanged between the processing unit and the first and second threads, a critical path of thread execution and maintaining the critical path of thread execution in a critical path tree. Therefore, for at least the forgoing reasons, claim 1 and all claims depending therefrom are in condition for allowance.

Similar to claim 1, claim 11 includes recitations directed to monitoring information exchanged between a processing unit and first and second threads executed by the processing unit and determining, based on the information exchanged between the processing unit and the first and second threads, a critical path of thread execution and maintaining the critical path of thread execution in a critical path tree. Therefore, for at least the forgoing reasons related to claim 1, claims 11, and all claims depending therefrom are in condition for allowance.

Similar to claims 1, claims 21 and 32 include recitations directed to monitoring information exchanged between a processing unit and first and second threads executed by the processing unit and determining, based on the information exchanged between the processing unit and the first and second threads, a critical path of thread execution and maintaining the critical path of thread execution in a critical path tree. Therefore, for at least the forgoing reasons related to claim 1, claims 21 and 32, and all claims depending therefrom are not anticipated by Hollingsworth. The Office action also cites Sarma to cure deficiencies of Hollingsworth that are unrelated to the forgoing recitations. However, the applicants respectfully submit that Sarma cannot cure the noted deficiencies of Hollingsworth. In particular, Sarma is directed to debugging multiple threads or processes and, accordingly, doesn't describe or suggest maintaining a critical path of thread execution in a critical path tree. Therefore, for at least the forgoing reasons, claims 21, 32, and all claims depending therefrom are in condition for allowance.

Conclusion

The applicants respectfully submit that all claims are in condition for allowance. Reconsideration of the application and allowance thereof are respectfully requested. If there is any matter that the examiner would like to discuss, the examiner is invited to contact the undersigned representative at the telephone number set forth below.

Respectfully submitted,

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